

EMI TEST REPORT

Test Report No. 15815220H-R2

Customer	Panasonic Automotive Systems Co., Ltd.
Description of EUT	Wireless Charger
Model Number of EUT	AT2604
FCC ID	ACJ932AT2604
Test Regulation	FCC Part 18
Test Result	Complied
Issue Date	August 8, 2025
Remarks	-

Representative test engineerShousei Hamaguchi
Engineer**Approved by**Akihiko Maeda
Leader

CERTIFICATE 5107.02

- ☐ The testing in which "Non-accreditation" is displayed is outside the accreditation scopes in UL Japan, Inc.
☒ There is no testing item of "Non-accreditation".

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- For any test report referred in this report, the latest version (including any revisions) is always referred to.
- If the latest version is a revision, it replaces the previous version. See the table below for revisions and versions.

REVISION HISTORY

Revision	Test Report No.	Date	Page Revised Contents
- (Original)	15815220H	July 7, 2025	-
1	15815220H-R1	July 24, 2025	Correction of the Rated Output Power for Radio Specification in Clause 2.2. From "0 W / 15 W" to "5 W / 15 W"
2	15815220H-R2	August 8, 2025	Correction of the limit of the following frequency in Radiated Emission test data; from 25.5 to 23.5. - 1.0827 MHz (P. 12) - 1.1430 MHz (P. 13) - 1.1475 MHz (P. 14)

Reference: Abbreviations (Including words undescribed in this report)

A2LA	The American Association for Laboratory Accreditation	IEC	International Electrotechnical Commission
AC	Alternating Current	IEEE	Institute of Electrical and Electronics Engineers
AFH	Adaptive Frequency Hopping	IF	Intermediate Frequency
AM	Amplitude Modulation	ILAC	International Laboratory Accreditation Conference
Amp, AMP	Amplifier	ISED	Innovation, Science and Economic Development Canada
ANSI	American National Standards Institute	ISO	International Organization for Standardization
Ant, ANT	Antenna	JAB	Japan Accreditation Board
AP	Access Point	LAN	Local Area Network
ASK	Amplitude Shift Keying	LIMS	Laboratory Information Management System
Atten., ATT	Attenuator	MCS	Modulation and Coding Scheme
AV	Average	MRA	Mutual Recognition Arrangement
BPSK	Binary Phase-Shift Keying	N/A	Not Applicable
BR	Bluetooth Basic Rate	NIST	National Institute of Standards and Technology
BT	Bluetooth	NS	No signal detect.
BT LE	Bluetooth Low Energy	NSA	Normalized Site Attenuation
BW	BandWidth	NVLAP	National Voluntary Laboratory Accreditation Program
Cal Int	Calibration Interval	OBW	Occupied Band Width
CCK	Complementary Code Keying	OFDM	Orthogonal Frequency Division Multiplexing
Ch., CH	Channel	P/M	Power meter
CISPR	Comite International Special des Perturbations Radioelectriques	PCB	Printed Circuit Board
CW	Continuous Wave	PER	Packet Error Rate
DBPSK	Differential BPSK	PHY	Physical Layer
DC	Direct Current	PK	Peak
D-factor	Distance factor	PN	Pseudo random Noise
DFS	Dynamic Frequency Selection	PRBS	Pseudo-Random Bit Sequence
DQPSK	Differential QPSK	PSD	Power Spectral Density
DSSS	Direct Sequence Spread Spectrum	QAM	Quadrature Amplitude Modulation
EDR	Enhanced Data Rate	QP	Quasi-Peak
EIRP, e.i.r.p.	Equivalent Isotropically Radiated Power	QPSK	Quadri-Phase Shift Keying
EMC	ElectroMagnetic Compatibility	RBW	Resolution Band Width
EMI	ElectroMagnetic Interference	RDS	Radio Data System
EN	European Norm	RE	Radio Equipment
ERP, e.r.p.	Effective Radiated Power	RF	Radio Frequency
EU	European Union	RMS	Root Mean Square
EUT	Equipment Under Test	RSS	Radio Standards Specifications
Fac.	Factor	Rx	Receiving
FCC	Federal Communications Commission	SA, S/A	Spectrum Analyzer
FHSS	Frequency Hopping Spread Spectrum	SG	Signal Generator
FM	Frequency Modulation	SVSWR	Site-Voltage Standing Wave Ratio
Freq.	Frequency	TR	Test Receiver
FSK	Frequency Shift Keying	Tx	Transmitting
GFSK	Gaussian Frequency-Shift Keying	VBW	Video BandWidth
GNSS	Global Navigation Satellite System	Vert.	Vertical
GPS	Global Positioning System	WLAN	Wireless LAN
Hori.	Horizontal	WPT	Wireless Power Transfer
ICES	Interference-Causing Equipment Standard	-	-

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SECTION 1: Customer Information

Company Name	Panasonic Automotive Systems Co., Ltd.*1)
Address	4261, Ikonobe-cho, Tsuzuki-ku, Yokohama-shi, Kanagawa-ken 224-8520, Japan
Telephone Number	+81-80-3444-7148
Contact Person	Shuko Saito

*1) The Grantee name in the FCC application is "Panasonic Corporation of North America".

The information provided by the customer is as follows;

- Customer, Description of EUT, Model Number of EUT, FCC ID on the cover and other relevant pages
- Operating/Test Mode(s) (Mode(s)) on all the relevant pages
- SECTION 1: Customer Information
- SECTION 2: Equipment Under Test (EUT) other than the Receipt Date and Test Date
- SECTION 4: Operation of EUT during testing

SECTION 2: Equipment Under Test (EUT)

2.1. Identification of EUT

Description	Wireless Charger
Model Number	AT2604
Serial Number	Refer to SECTION 4.2
Condition	Production prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification	No Modification by the test lab
Receipt Date	May 30, 2025
Test Date	June 2 and 3, 2025

2.2. Product Description

General Specification

Rating	DC +10.5 V to +16 V (Typ: +12 V)
Feature of EUT	Use the ACC KEY of the car to turn the Wireless charger power ON/OFF. Place the charging side of the portable device (etc. mobile phone) down. When charging, the operation indicator light (orange) comes on. If charging is not occurring, try placing the portable device as close to the center of the charging area as possible When charging is complete, the operation indicator light (green) comes on.

Radio Specification

Frequency Band	120.3 kHz / 127.0 kHz / 127.5 kHz / 116.4 kHz to 132.2 kHz
Rated Output Power	5 W / 15 W
Coil system	Single Coil
Charging distance	Contact

SECTION 3: Test Summary

3.1 Test specification

Test Specification	FCC Part 18 The latest version on the first day of the testing period
Title	FCC 47CFR Part18 Industrial, scientific, and medical equipment

3.2 Reference Standards

FCC/OET-MP5

3.3 Summary of Test Results

Item	Specification	Result	Remarks
Radiated Emission	Section 18.305	Complied	-
Conducted Emission	Section 18.307	N/A	*1)

* Note: UL Japan, Inc.'s EMI Work Procedure: Work Instructions-ULID-003591.

*1) The test is not applicable since the EUT is not the device that is designed to be connected to the public utility (AC) power line.

3.4 Addition to standard

No addition, exclusion nor deviation has been made from the standard.

3.5 Uncertainty

EMI

Measurement uncertainty is not taken into account when stating conformity with a specified requirement.
Note: When margins obtained from test results are less than the measurement uncertainty, the test results may exceed the limit.

The following uncertainties have been calculated to provide a confidence level of 95 % using a coverage factor $k = 2$.

Radiated emission

Measurement distance	Frequency range		Unit	Calculated Uncertainty (+/-)
3 m	9 kHz to 30 MHz		dB	3.3
10 m			dB	3.1
3 m	30 MHz to 200 MHz	Horizontal	dB	5.0
		Vertical	dB	5.0
	200 MHz to 1000 MHz	Horizontal	dB	5.2
		Vertical	dB	6.2
10 m	30 MHz to 200 MHz	Horizontal	dB	5.5
		Vertical	dB	5.4
	200 MHz to 1000 MHz	Horizontal	dB	5.5
		Vertical	dB	5.5

3.6 Test Location

UL Japan, Inc. Ise EMC Lab.

4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 Japan

Telephone: +81-596-24-8999

A2LA Certificate Number: 5107.02 / FCC Test Firm Registration Number: 884919

ISED Lab Company Number: 2973C / CAB identifier: JP0002

Test site	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms	Maximum measurement distance
No.1 semi-anechoic chamber (SAC1)	19.2 x 11.2 x 7.7	7.0 x 6.0	No.1 Power source room	10 m
No.2 semi-anechoic chamber (SAC2)	7.5 x 5.8 x 5.2	4.0 x 4.0	-	3 m
No.3 semi-anechoic chamber (SAC3)	12.0 x 8.5 x 5.9	6.8 x 5.75	No.3 Preparation room (PR3)	3 m
No.3 shielded room (SR3)	4.0 x 6.0 x 2.7	N/A	-	-
No.4 semi-anechoic chamber (SAC4)	12.0 x 8.5 x 5.9	6.8 x 5.75	No.4 Preparation room (PR4)	3 m
No.4 shielded room (SR4)	4.0 x 6.0 x 2.7	N/A	-	-
No.5 semi-anechoic chamber (SAC5)	6.0 x 6.0 x 3.9	6.0 x 6.0	-	-
No.5 measurement room (MR5)	6.4 x 6.4 x 3.0	6.4 x 6.4	-	-
No.6 shielded room (SR6)	4.0 x 4.5 x 2.7	4.0 x 4.5	-	-
No.6 measurement room (MR6)	4.75 x 5.4 x 3.0	4.75 x 4.15	-	-
No.7 shielded room (SR7)	4.7 x 7.5 x 2.7	4.7 x 7.5	-	-
No.8 measurement room (MR8)	3.1 x 5.0 x 2.7	3.1 x 5.0	-	-
No.9 measurement room (MR9)	8.8 x 4.6 x 2.8	2.4 x 2.4	-	-
No.10 shielded room (SR10)	3.8 x 2.8 x 2.8	3.8 x 2.8	-	-
No.11 measurement room (MR11)	4.0 x 3.4 x 2.5	N/A	-	-
No.12 measurement room (MR12)	2.6 x 3.4 x 2.5	N/A	-	-
Large Chamber	16.9 x 22.1 x 10.17	16.9 x 22.1	-	10 m
Small Chamber	5.3 x 6.69 x 3.59	5.3 x 6.69	-	-

3.7 Test data, Test instruments, and Test set up

Refer to APPENDIX.

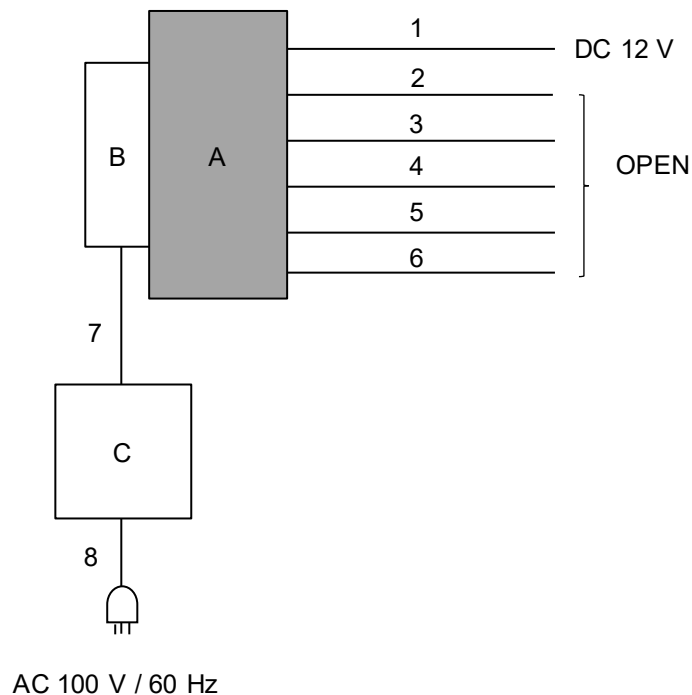
SECTION 4: Operation of EUT during testing

4.1. Operating mode(s)

Test mode	Remarks
1) Normal Charging mode (120.3 kHz / EPP 15 W)	Used for Receiver
2) Normal Charging mode (127.0 kHz / EPP 15 W)	Used for Receiver
3) Normal Charging mode (127.5 kHz / EPP 15 W)	Used for Receiver

*1) For Mode 1 to 3, after the output level between 5 W and 15 W were compared at pre-check, the test was performed only with 15W as representative, which had the worst result.

4.2. Configuration and peripherals



*Cabling and setup were taken into consideration and test data was taken under worse case conditions.

*Item A and Item B communicate and charges via air interface.

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remark
A	Wireless Charger	AT2604	No.046	Panasonic Automotive Systems Co., Ltd.	EUT
B	Reference Receiver	TRP#MP1B	1	Nok9	-
C	Qi Reference Tester	LP/MP/FOD	200134-1807	Nok9	-

List of cables used

No.	Name	Length (m)	Shield		Remark
			Cable	Connector	
1	DC Cable	4.2	Unshielded	Unshielded	-
2	CAN Cable	2.0	Unshielded	Unshielded	-
3	Signal Cable	2.0	Unshielded	Unshielded	-
4	Signal Cable	2.0	Unshielded	Unshielded	-
5	Signal Cable	2.0	Unshielded	Unshielded	-
6	Signal Cable	2.0	Unshielded	Unshielded	-
7	Communication Cable	0.6	Unshielded	Unshielded	-
8	AC Cable	1.5	Unshielded	Unshielded	-

SECTION 5: Radiated Emission

5.1 Operating environment

Date	See data
Test place	See data
Temperature	See data
Humidity	See data
Test engineer	See data
Mode	See data

5.2 Test configuration

EUT was placed on the platform of nominal size, 1.0 m by 1.5 m, raised 1.0 m above the conducting ground plane.

The EUT was set on the edge of the tabletop.

Test was made with the antenna positioned in 0 deg., 45 deg., 90 deg., 135 deg., 180 deg., and Horizontal. The measurement antenna was varied in height above the conducting ground plane to obtain the maximum signal strength.

Photographs of the set up are shown in Appendix 3.

*Refer to Figure 1 about Direction of the Loop Antenna.

5.3 Test conditions

Frequency range	9 kHz to 30 MHz (Loop antenna)
	30 MHz to 200 MHz (Biconical antenna)
	200 MHz to 400 MHz (Logperiodic antenna)
Test distance	3 m / 10 m
EUT position	Table top
EUT operation mode	See Clause 4.1

5.4 Test procedure

[Below 30 MHz]

The height of antenna was fixed in 2 m.

EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

The measurements were performed in 0 deg., 45 deg., 90 deg., 135 deg., 180 deg., and Horizontal with the Test Receiver.

The electric field intensity at a distance of 300 m was calculated from the measurement results at distances of 3 m and 10 m.

[Above 30 MHz]

Maximum electric field intensity was confirmed with the measurements at distances of 3 m and 10 m. The electric field intensity at a distance of 300 m was calculated from the measurement results at distances of 3 m and 10 m.

The radiated emission measurements were made with the following detector function of the test receiver.

The test was made with the detector (RBW) in the following table.

Frequency	9 kHz to 150 kHz	150 kHz to 30 MHz	30 MHz to 400 MHz
Instrument used	Test Receiver		
IF Bandwidth	AV: 200 Hz	AV: 9 kHz	AV: 120 kHz

The measurement result was calculated by the following formula:

[Frequency at which the signal was confirmed at both 10 m and 3 m]

Result = Reading + ANT Factor + Cable loss + Atten loss + Extrapolation Factor - AMP gain

Extrapolation Factor = decade * Log (Test distance (3 m) / Separate distance (300 m))

decade = (10 m reading - 3 m reading) / (log 3 m - log 10 m)

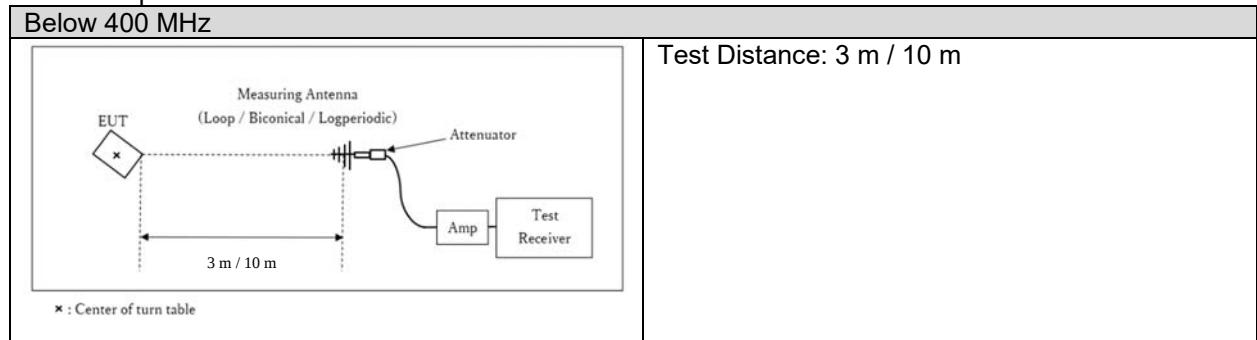
*Refer to Part 18 Section 305 Notes 2 and KDB 629601.

[Other Frequency]

Result = Reading + ANT Factor + Cable loss + Atten loss + Extrapolation Factor - AMP gain

Extrapolation Factor = 20 * Log (Test distance (3 m) / Separate distance (300 m))

<Test Setup>



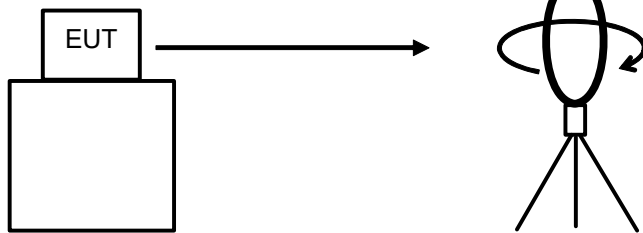
The test results and limit are rounded off to one decimal place, so some differences might be observed.

5.5 Test result

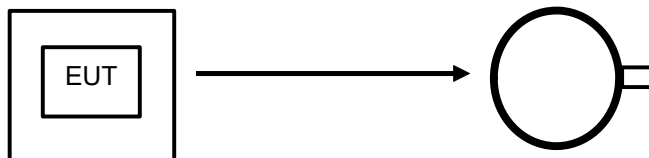
Summary of the test results: Pass

Figure 1: Direction of the Loop Antenna

Side View (Vertical)

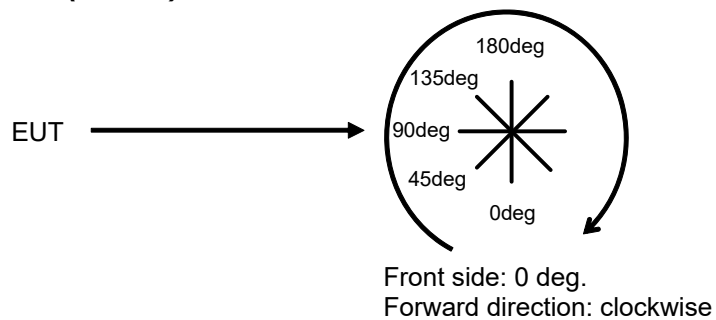


Top View (Horizontal)



Antenna was not rotated.

Top View (Vertical)



APPENDIX 1: Test Data

Radiated Emission

Mode	Mode 1
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Date	Test site	Temperature	Humidity	Engineer	Measurement Range
June 2, 2025	SAC1	24 deg. C	50 % RH	Hiroyuki Furutaka	Below 30 MHz 3 m
June 2, 2025	SAC1	22 deg. C	50 % RH	Shousei Hamaguchi	Below 30 MHz 10 m

FREQ [MHz]	Reading (3 m) [dBμV]	Reading (10 m) [dBμV]	ANT Factor [dB/m]	Atten + Cable loss [dB]	AMP Gain [dB]	Extrapolation Factor [dB]	Result (300 m) [dBμV/m]	Limit (300 m) [dBμV/m]	Margin [dB]	Antenna [deg]	Remarks
0.1203	95.1	68.0	19.8	6.0	32.3	-103.7	-15.0	23.5	38.5	0	
0.1203	94.2	67.0	19.8	6.0	32.3	-104.0	-16.3	23.5	39.8	45	
0.1203	92.8	66.3	19.8	6.0	32.3	-101.4	-15.0	23.5	38.5	90	
0.1203	94.5	66.7	19.8	6.0	32.3	-106.3	-18.3	23.5	41.8	135	
0.1203	95.0	67.7	19.8	6.0	32.3	-104.4	-15.9	23.5	39.4	180	
0.1203	92.6	65.5	19.8	6.0	32.3	-103.7	-17.5	23.5	41.0	Horizontal	
0.2406	40.0	NS	20.0	6.0	32.3	-40.0	-6.2	23.5	29.8	0	Reading(10 m) is Floor Noise *1)
0.3609	59.7	36.7	20.0	6.1	32.2	-88.0	-34.5	23.5	58.0	0	
0.4812	36.9	NS	20.0	6.1	32.2	-40.0	-9.2	23.5	32.7	0	Reading(10 m) is Floor Noise *1)
0.6015	51.1	33.4	19.9	6.1	32.2	-67.7	-22.8	23.5	46.3	0	
0.7218	35.9	NS	20.1	6.2	32.2	-40.0	-10.1	23.5	33.6	0	Reading(10 m) is Floor Noise *1)
0.8421	44.8	NS	20.0	6.2	32.3	-40.0	-1.2	23.5	24.7	0	Reading(10 m) is Floor Noise *1)
0.9624	35.2	NS	20.0	6.2	32.3	-40.0	-10.9	23.5	34.4	0	Reading(10 m) is Floor Noise *1)
1.0827	40.4	NS	20.0	6.2	32.3	-40.0	-5.6	23.5	29.1	0	Reading(10 m) is Floor Noise *1)
1.2030	34.6	NS	20.0	6.2	32.3	-40.0	-11.4	23.5	34.9	0	Reading(10 m) is Floor Noise *1)

CALCULATION(Result) : Reading + ANT Factor + Cable loss + Atten loss + Extrapolation Factor - AMP gain
 Extrapolation Factor = decade * Log (Test distance(3 m) / Separate distance(300 m))
 decade = (10 m reading - 3 m reading) / (log 3 m - log 10 m)

*1) Used for the square of an inverse linear distance extrapolation factor (20 dB/decade)
 Except for the above table : adequate margin data below the limits.

10 m Reading of Extrapolation Factor is used the value of 0 deg.

Worst direction of EUT was decided by test result performed on test distance at 3 m, and test distance at 10 m was performed worst direction.

Radiated Emission

Mode	Mode 2
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Date	Test site	Temperature	Humidity	Engineer	Measurement Range
June 2, 2025	SAC1	24 deg. C	50 % RH	Hiroyuki Furutaka	Below 30 MHz

FREQ [MHz]	Reading (3 m) [dBμV]	Reading (10 m) [dBμV]	ANT Factor [dB/m]	Atten + Cable loss [dB]	AMP Gain [dB]	Extrapolation Factor [dB]	Result (300 m) [dBμV/m]	Limit (300 m) [dBμV/m]	Margin [dB]	Antenna [deg]	Remarks
0.1270	94.1	66.6	19.8	6.0	32.3	-105.2	-17.5	23.5	41.0	0	
0.1270	92.9	65.9	19.8	6.0	32.3	-103.3	-16.8	23.5	40.3	45	
0.1270	91.0	64.6	19.8	6.0	32.3	-101.0	-16.4	23.5	39.9	90	
0.1270	93.2	66.4	19.8	6.0	32.3	-102.5	-15.8	23.5	39.3	135	
0.1270	94.0	66.4	19.8	6.0	32.3	-105.6	-18.0	23.5	41.5	180	
0.1270	91.6	64.1	19.8	6.0	32.3	-105.2	-20.0	23.5	43.5	Horizontal	
0.2540	40.4	NS	20.0	6.1	32.3	-40.0	-5.8	23.5	29.3	0	Reading(10 m) is Floor Noise *1)
0.3810	63.0	37.4	20.0	6.1	32.2	-97.9	-41.1	23.5	64.6	0	
0.5080	32.9	NS	20.0	6.1	32.2	-40.0	-13.3	23.5	36.8	0	Reading(10 m) is Floor Noise *1)
0.6350	53.2	33.1	20.0	6.1	32.2	-76.9	-29.8	23.5	53.3	0	
0.7620	32.3	NS	20.1	6.2	32.3	-40.0	-13.7	23.5	37.2	0	Reading(10 m) is Floor Noise *1)
0.8890	46.4	NS	20.0	6.2	32.3	-40.0	0.4	23.5	23.1	0	Reading(10 m) is Floor Noise *1)
1.0160	32.2	NS	20.0	6.2	32.3	-40.0	-13.9	23.5	37.4	0	Reading(10 m) is Floor Noise *1)
1.1430	42.0	NS	20.0	6.2	32.3	-40.0	-4.0	23.5	27.5	0	Reading(10 m) is Floor Noise *1)
1.2700	31.9	NS	20.0	6.2	32.3	-40.0	-14.1	23.5	37.6	0	Reading(10 m) is Floor Noise *1)

CALCULATION(Result) : Reading + ANT Factor + Cable loss + Atten loss + Extrapolation Factor - AMP gain
 Extrapolation Factor = decade * Log (Test distance(3 m) / Separate distance(300 m))
 decade = (10 m reading - 3 m reading) / (log 3 m - log 10 m)

*1) Used for the square of an inverse linear distance extrapolation factor (20 dB/decade)
 Except for the above table : adequate margin data below the limits.

10 m Reading of Extrapolation Factor is used the value of 0 deg.
 Worst direction of EUT was decided by test result performed on test distance at 3 m, and test distance at 10 m was performed worst direction.

Radiated Emission

Mode	Mode 3				
Date	Test site	Temperature	Humidity	Engineer	Measurement Range
June 2, 2025	SAC1	24 deg. C	50 % RH	Hiroyuki Furutaka	Below 30 MHz 3 m
June 2, 2025	SAC1	22 deg. C	50 % RH	Shousei Hamaguchi	Below 30 MHz 10 m

FREQ [MHz]	Reading (3 m) [dBμV]	Reading (10 m) [dBμV]	ANT Factor [dB/m]	Atten + Cable loss [dB]	AMP Gain [dB]	Extrapolation Factor [dB]	Result (300 m) [dBμV/m]	Limit (300 m) [dBμV/m]	Margin [dB]	Antenna [deg]	Remarks
0.1275	96.8	69.0	19.8	6.0	32.3	-106.3	-16.0	23.5	39.5	0	
0.1275	95.8	68.2	19.8	6.0	32.3	-105.6	-16.2	23.5	39.7	45	
0.1275	94.3	67.3	19.8	6.0	32.3	-103.3	-15.4	23.5	38.9	90	
0.1275	96.3	68.8	19.8	6.0	32.3	-105.2	-15.3	23.5	38.8	135	
0.1275	96.6	68.9	19.8	6.0	32.3	-106.0	-15.8	23.5	39.3	180	
0.1275	94.2	66.6	19.8	6.0	32.3	-105.6	-17.8	23.5	41.3	Horizontal	
0.2550	39.3	NS	20.0	6.1	32.3	-40.0	-6.9	23.5	30.4	0	Reading(10 m) is Floor Noise *1)
0.3825	60.2	38.0	20.0	6.1	32.2	-84.9	-30.9	23.5	54.4	0	
0.5100	32.8	NS	20.0	6.1	32.2	-40.0	-13.4	23.5	36.9	0	Reading(10 m) is Floor Noise *1)
0.6375	52.0	33.2	20.0	6.1	32.2	-71.9	-26.0	23.5	49.5	0	
0.7650	32.1	NS	20.1	6.2	32.3	-40.0	-13.9	23.5	37.4	0	Reading(10 m) is Floor Noise *1)
0.8925	46.2	NS	20.0	6.2	32.3	-40.0	0.2	23.5	23.3	0	Reading(10 m) is Floor Noise *1)
1.0200	31.8	NS	20.0	6.2	32.3	-40.0	-14.3	23.5	37.8	0	Reading(10 m) is Floor Noise *1)
1.1475	41.9	NS	20.0	6.2	32.3	-40.0	-4.1	23.5	27.6	0	Reading(10 m) is Floor Noise *1)
1.2750	31.6	NS	20.0	6.2	32.3	-40.0	-14.4	23.5	37.9	0	Reading(10 m) is Floor Noise *1)

CALCULATION(Result) : Reading + ANT Factor + Cable loss + Atten loss + Extrapolation Factor - AMP gain
 Extrapolation Factor = decade * Log (Test distance(3 m) / Separate distance(300 m))
 decade = (10 m reading - 3 m reading) / (log 3 m - log 10 m)

*1) Used for the square of an inverse linear distance extrapolation factor (20 dB/decade)
 Except for the above table : adequate margin data below the limits.

10 m Reading of Extrapolation Factor is used the value of 0 deg.
 Worst direction of EUT was decided by test result performed on test distance at 3 m, and test distance at 10 m was performed worst direction.

Radiated Emission

Mode	Mode 1
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Date	Test site	Temperature	Humidity	Engineer	Measurement Range
June 3, 2025	SAC1	23 deg. C	59 % RH	Hiroyuki Furutaka	Above 30 MHz

FREQ [MHz]	Reading (3 m) [dBμV]	Reading (10 m) [dBμV]	ANT Factor [dB/m]	Atten + Cable loss [dB]	AMP Gain [dB]	Extrapolation Factor [dB]	Result (300 m) [dBμV/m]	Limit (300 m) [dBμV/m]	Margin [dB]	Antenna [deg]	Remarks
107.1800	16.4	NS	11.1	8.5	32.1	-40.0	-36.1	23.5	59.6	Horizontal	Reading(10 m) is Floor Noise *1)
150.2220	18.4	NS	15.0	9.0	32.0	-40.0	-29.7	23.5	53.2	Horizontal	Reading(10 m) is Floor Noise *1)
184.3610	16.5	NS	16.2	9.4	32.0	-40.0	-29.9	23.5	53.4	Horizontal	Reading(10 m) is Floor Noise *1)
219.2000	20.3	NS	11.3	9.7	32.0	-40.0	-30.7	23.5	54.2	Horizontal	Reading(10 m) is Floor Noise *1)
306.3260	17.0	NS	13.8	10.5	32.1	-40.0	-30.8	23.5	54.3	Horizontal	Reading(10 m) is Floor Noise *1)
380.8010	16.4	NS	15.3	11.1	32.1	-40.0	-29.4	23.5	52.9	Horizontal	Reading(10 m) is Floor Noise *1)
107.1800	17.9	NS	11.1	8.5	32.1	-40.0	-34.6	23.5	58.1	Vertical	Reading(10 m) is Floor Noise *1)
150.2220	16.7	NS	15.0	9.0	32.0	-40.0	-31.4	23.5	54.9	Vertical	Reading(10 m) is Floor Noise *1)
184.3610	17.4	NS	16.2	9.4	32.0	-40.0	-29.0	23.5	52.5	Vertical	Reading(10 m) is Floor Noise *1)
219.2000	16.4	NS	11.3	9.7	32.0	-40.0	-34.6	23.5	58.1	Vertical	Reading(10 m) is Floor Noise *1)
306.3260	17.0	NS	13.8	10.5	32.1	-40.0	-30.8	23.5	54.3	Vertical	Reading(10 m) is Floor Noise *1)
380.8010	16.6	NS	15.3	11.1	32.1	-40.0	-29.2	23.5	52.7	Vertical	Reading(10 m) is Floor Noise *1)

CALCULATION(Result) : Reading + ANT Factor + Cable loss + Atten loss + Extrapolation Factor - AMP gain
 Extrapolation Factor = decade * Log (Test distance(3 m) / Separate distance(300 m))
 decade = (10 m reading - 3 m reading) / (log 3 m - log 10 m)

*1) Used for the square of an inverse linear distance extrapolation factor (20 dB/decade)
 Except for the above table : adequate margin data below the limits.

Radiated Emission

Mode	Mode 2				
Date	Test site	Temperature	Humidity	Engineer	Measurement Range
June 3, 2025	SAC1	23 deg. C	59 % RH	Hiroyuki Furutaka	Above 30 MHz

FREQ [MHz]	Reading (3 m) [dBμV]	Reading (10 m) [dBμV]	ANT Factor [dB/m]	Atten + Cable loss [dB]	AMP Gain [dB]	Extrapolation Factor [dB]	Result (300 m) [dBμV/m]	Limit (300 m) [dBμV/m]	Margin [dB]	Antenna [deg]	Remarks
107.1800	16.5	NS	11.1	8.5	32.1	-40.0	-36.0	23.5	59.5	Horizontal	Reading(10 m) is Floor Noise *1)
150.2220	18.5	NS	15.0	9.0	32.0	-40.0	-29.6	23.5	53.1	Horizontal	Reading(10 m) is Floor Noise *1)
184.3610	16.4	NS	16.2	9.4	32.0	-40.0	-30.0	23.5	53.5	Horizontal	Reading(10 m) is Floor Noise *1)
219.2000	20.2	NS	11.3	9.7	32.0	-40.0	-30.8	23.5	54.3	Horizontal	Reading(10 m) is Floor Noise *1)
306.3260	17.0	NS	13.8	10.5	32.1	-40.0	-30.8	23.5	54.3	Horizontal	Reading(10 m) is Floor Noise *1)
380.8010	16.3	NS	15.3	11.1	32.1	-40.0	-29.5	23.5	53.0	Horizontal	Reading(10 m) is Floor Noise *1)
107.1800	18.4	NS	11.1	8.5	32.1	-40.0	-34.1	23.5	57.6	Vertical	Reading(10 m) is Floor Noise *1)
150.2220	16.5	NS	15.0	9.0	32.0	-40.0	-31.6	23.5	55.1	Vertical	Reading(10 m) is Floor Noise *1)
184.3610	17.4	NS	16.2	9.4	32.0	-40.0	-29.0	23.5	52.5	Vertical	Reading(10 m) is Floor Noise *1)
219.2000	15.4	NS	11.3	9.7	32.0	-40.0	-35.6	23.5	59.1	Vertical	Reading(10 m) is Floor Noise *1)
306.3260	16.2	NS	13.8	10.5	32.1	-40.0	-31.6	23.5	55.1	Vertical	Reading(10 m) is Floor Noise *1)
380.8010	16.5	NS	15.3	11.1	32.1	-40.0	-29.3	23.5	52.8	Vertical	Reading(10 m) is Floor Noise *1)

CALCULATION(Result) : Reading + ANT Factor + Cable loss + Atten loss + Extrapolation Factor - AMP gain
 Extrapolation Factor = decade * Log (Test distance(3 m) / Separate distance(300 m))
 decade = (10 m reading - 3 m reading) / (log 3 m - log 10 m)

*1) Used for the square of an inverse linear distance extrapolation factor (20 dB/decade)
 Except for the above table : adequate margin data below the limits.

Radiated Emission

Mode	Mode 3				
Date	Test site	Temperature	Humidity	Engineer	Measurement Range
June 3, 2025	SAC1	23 deg. C	59 % RH	Hiroyuki Furutaka	Above 30 MHz

FREQ [MHz]	Reading (3 m) [dBμV]	Reading (10 m) [dBμV]	ANT Factor [dB/m]	Atten + Cable loss [dB]	AMP Gain [dB]	Extrapolation Factor [dB]	Result (300 m) [dBμV/m]	Limit (300 m) [dBμV/m]	Margin [dB]	Antenna [deg]	Remarks
107.1800	16.4	NS	11.1	8.5	32.1	-40.0	-36.1	23.5	59.6	Horizontal	Reading(10 m) is Floor Noise *1)
150.2220	18.0	NS	15.0	9.0	32.0	-40.0	-30.1	23.5	53.6	Horizontal	Reading(10 m) is Floor Noise *1)
184.3610	16.6	NS	16.2	9.4	32.0	-40.0	-29.8	23.5	53.3	Horizontal	Reading(10 m) is Floor Noise *1)
219.2000	19.0	NS	11.3	9.7	32.0	-40.0	-32.0	23.5	55.5	Horizontal	Reading(10 m) is Floor Noise *1)
306.3260	18.0	NS	13.8	10.5	32.1	-40.0	-29.8	23.5	53.3	Horizontal	Reading(10 m) is Floor Noise *1)
380.8010	16.7	NS	15.3	11.1	32.1	-40.0	-29.1	23.5	52.6	Horizontal	Reading(10 m) is Floor Noise *1)
107.1800	18.5	NS	11.1	8.5	32.1	-40.0	-34.0	23.5	57.5	Vertical	Reading(10 m) is Floor Noise *1)
150.2220	16.8	NS	15.0	9.0	32.0	-40.0	-31.3	23.5	54.8	Vertical	Reading(10 m) is Floor Noise *1)
184.3610	17.1	NS	16.2	9.4	32.0	-40.0	-29.3	23.5	52.8	Vertical	Reading(10 m) is Floor Noise *1)
219.2000	16.3	NS	11.3	9.7	32.0	-40.0	-34.7	23.5	58.2	Vertical	Reading(10 m) is Floor Noise *1)
306.3260	16.5	NS	13.8	10.5	32.1	-40.0	-31.3	23.5	54.8	Vertical	Reading(10 m) is Floor Noise *1)
380.8010	16.7	NS	15.3	11.1	32.1	-40.0	-29.1	23.5	52.6	Vertical	Reading(10 m) is Floor Noise *1)

CALCULATION(Result) : Reading + ANT Factor + Cable loss + Atten loss + Extrapolation Factor - AMP gain
 Extrapolation Factor = decade * Log (Test distance(3 m) / Separate distance(300 m))
 decade = (10 m reading - 3 m reading) / (log 3 m - log 10 m)

*1) Used for the square of an inverse linear distance extrapolation factor (20 dB/decade)
 Except for the above table : adequate margin data below the limits.

APPENDIX 2: Test Instruments

Test equipment

Test Item	LIMS ID	Description	Manufacturer	Model	Serial	Last Calibration Date	Cal Int
RE	141198	Biconical Antenna	Schwarzbeck Mess-Elektronik OHG	VHA9103+BBA9106	2513	07/10/2024	12
RE	141213	Attenuator(6dB)	Weinschel Corp	2	BK7971	11/11/2024	12
RE	141215	Coaxial Cable	Fujikura/Suhner/TSJ	5D-2W/3D-2W/ RG400u/ RFM-E421(SW)	-/01068 (Switcher)	06/24/2024	12
RE	141350	Coaxial Cable	Suhner/storm/Agilent/TSJ	-	-	03/14/2025	12
RE	141530	Digital Tester	Fluke Corporation	FLUKE 26-3	78030621	02/25/2025	12
RE	141568	Thermo-Hygrometer	CUSTOM. Inc	CTH-201	2901	01/19/2025	12
RE	141582	Pre Amplifier	SONOMA INSTRUMENT	310	260834	02/14/2025	12
RE	141583	Pre Amplifier	SONOMA INSTRUMENT	310	260833	04/02/2025	12
RE	141950	EMI Test Receiver	Rohde & Schwarz	ESU26	100412	11/28/2024	12
RE	141998	AC1 Semi Anechoic Chamber(NSA)	TDK	Semi Anechoic Chamber 10m	DA-06881	12/06/2023	24
RE	142226	Measure, Tape, Steel	KOMELON	KMC-36	-	-	-
RE	178648	EMI measurement program	TSJ (Techno Science Japan)	TEPTO-DV	-	-	-
RE	207745	Coaxial Cable	UL-ISE	-	-	03/19/2025	12
RE	242170	Logperiodic Antenna	Schwarzbeck Mess-Elektronik OHG	VUSLP9111B	00728	12/17/2024	12
RE	252514	Active Loop Antenna	Schwarzbeck Mess-Elektronik OHG	FMZB 1519-60 D	1519-60 D-067	09/26/2024	12

*Hyphens for Last Calibration Date and Cal Int (month) are instruments that Calibration is not required (e.g. software), or instruments checked in advance before use.

The expiration date of the calibration is the end of the expired month.

As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.

All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or international standards.

Test item:

RE: Radiated Emission